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EXAMINER

HUANG, CHENG YUAN

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte STEVEN M. GEORGE, ARRELAINE ALLEN DAMERON,
BEAU B. BURTON, and MARKUS D. GRONER¹

Appeal 2015-007642
Application 12/664,858
Technology Center 1700

Before WESLEY B. DERRICK, CHRISTOPHER L. OGDEN, and
CHRISTOPHER C. KENNEDY, *Administrative Patent Judges*.

KENNEDY, *Administrative Patent Judge*.

DECISION ON APPEAL

This is an appeal under 35 U.S.C. § 134(a) from the Examiner's decision to reject claims 1, 10, and 12. An oral hearing was held on December 2, 2016. We have jurisdiction under 35 U.S.C. § 6(b).

We REVERSE.

BACKGROUND

The subject matter on appeal relates to flexible substrates comprising protective coatings. *E.g.*, Spec. 1:8–9; Claim 1. Claim 1 is reproduced below from the Claims Appendix of the Appeal Brief:

¹ According to the Appellants, the real party in interest is The Regents of the University of Colorado. App. Br. 1.

1. A coated flexible substrate comprising a flexible substrate having a coating, wherein the coating includes
 - a) at least two layers of an inorganic material other than silica, each of said layers having a thickness of from 10 to 50 angstroms and being produced by an atomic layer deposition process, and
 - b) a flexibilizing layer interposed between each adjacent pair of layers of the inorganic material, the flexibilizing layer having a total thickness of from 10 to 75% of the thickness of the thicker of said adjacent pair of layers of the inorganic material, wherein the flexibilizing layer is a hybrid organic-inorganic polymer that is deposited by a molecular layer deposition process, wherein the hybrid organic-inorganic polymer is a linear or branched chain structure having metal or semi-metal repeating units which alternate with organic units, the hybrid organic-inorganic polymer having the structure



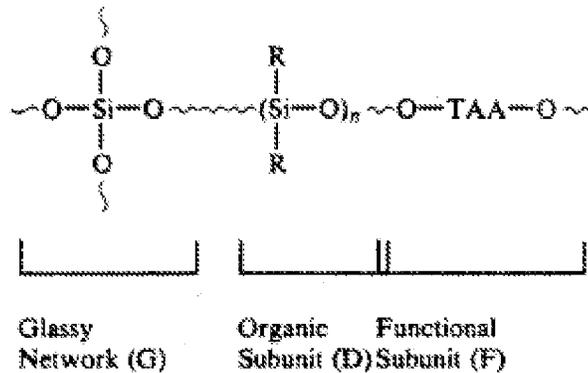
wherein M represents a metal or semi-metal atom selected from magnesium, calcium, strontium, barium, titanium, zirconium, manganese, iron, nickel, cobalt, zinc, cadmium, aluminum, gallium, indium, germanium, tin, lead, antimony or bismuth, each Z is independently a linking group that contains at least one a heteroatom, R represents a hydrocarbyl or inertly substituted hydrocarbyl group and n represents the degree of polymerization.

ANALYSIS

Claims 1, 10, and 12 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Czeremuszkina et al. (US 7,074,501 B2, issued July 11, 2006) in view of Badesha et al. (US 5,116,703, issued May 26, 1992).

Concerning the “[-M-Z-R-Z-]_n” structure of the hybrid organic-inorganic polymer required by claim 1, in the Final Action, the Examiner refers to columns 10 and 11 of Badesha and finds, with limited explanation,

that Badesha's organic-inorganic polymer would possess the claimed structure. *See* Final Act. 3; Ans. 3. In the Appeal Brief, the Appellants refer to column 13 of Badesha, which depicts the structure of Badesha's organic-inorganic polymer, and argue that Badesha's structure does not fall within the scope of claim 1. *See* App. Br. 5. Badesha's structure is depicted below:



Badesha at Col. 13. In the structure, G represents an inorganic glassy network, D represents an organic subunit, F represents a functional subunit, and the “wavy lines represent a continuation of the matrix-like structure.” *Id.* at 12:63–13:15.

In the Answer, the Examiner finds that Si in subunit G (i.e., the left-most Si) corresponds to the “M” of claim 1, that the O to the right of the left-most Si corresponds to the first “Z” of claim 1, that the organic subunit D may be a polyol which would correspond to the “R” of claim 1, and that the O to the right of the second Si corresponds to the second “Z” of claim 1. *See* Ans. 5.

For reasons explained by the Appellants, we agree that, if rewritten in a form similar to that of claim 1, Badesha's structure appears to include M-Z-M linkages that do not yield the claimed “[M-Z-R-Z]_n” structure. *See* Reply Br. 4–5. Namely, the wavy lines following glassy network G suggest

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repetition of subunit G such that an “[M-Z-M-Z-M-Z . . .]_n” structure is achieved. The Examiner’s analysis does not persuasively account for the wavy lines or otherwise provide a basis to question the Appellants’ interpretation of Badesha’s structure. *See* Ans. 5.

For that reason, on this record, we are constrained to reverse the Examiner’s rejection of claim 1. Because claims 10 and 12 depend from claim 1, and the Examiner’s rejection of those claims does not remedy the error identified above, we likewise cannot sustain the Examiner’s rejection of claims 10 and 12.

CONCLUSION

We REVERSE the Examiner’s rejections of claims 1, 10, and 12.

REVERSED